



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,494	04/12/2001	Kevin J. Knopp	CORE-63	2974

7590 08/12/2003
Pandiscio & Pandiscio
470 Totten Pond Road
Waltham, MA 02451-1914

EXAMINER

LEUNG, QUYEN PHAN

ART UNIT PAPER NUMBER

2828

DATE MAILED: 08/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,494

Applicant(s)

KNOPP ET AL.

Examiner

Quyen P. Leung

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 12-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In response to applicant's amendment filed 5/22/03, claims 1-3 have been amended. Claims 1-25 are pending with claims 12-25 being withdrawn from further consideration.

Response to Arguments

2. Applicant's arguments filed 5/22/03 have been fully considered but they are not persuasive. Applicant made the following arguments:

- a. Applicants believe that Fukuzawa et al does not disclose an intracavity lens extending across at least a central portion of the gain region.
- b. Applicants believe that Yoshida does not disclose an intracavity lens extending across at least a central portion of the gain region (see column 10, lines 48-53).

3. In response to both arguments above, Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

As pointed out in the previous Office action and repeated below, although the term intracavity lens is not used, Fukuzawa and Yoshida each teaches the same process (ion implantation and rapid thermal annealing) as applicant's invention and therefore it is inherent that they each teach an intracavity lens, as claimed by applicant.

It is not clear how the claimed invention is structurally different from that of either Fukuzawa and Yoshida.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuzawa et al (4,827,483). Fukuzawa et al discloses the claimed invention of a series of deposited material layers (9, 10, 11, 12, 13) comprising the structure of the “VCSEL” and an intracavity lens (inherent, see discussion below) formed in one of the series of deposited material layers (9, 10, 11, 12, 13) and in particular the gain region (11). Since Fukuzawa et al teaches a series of deposited material layers, which as claimed, defines a “VCSEL” structure, the device of Fukuzawa et al inherently is a “VCSEL” to the extent claimed by applicant.

Regarding the intracavity lens, see figures 6-7 and col. 6 line 33 through col. 7 line 12, which together show the series of deposited material layers (9, 10, 11, 12, 13) comprising a superlattice structure (11), with an adjacent region (16) being subjected to ion implantation (see col. 6 lines 57-59) and rapid thermal annealing (see col. 6 line 63 through col. 7 line 3) so as to disorder the superlattice structure (11) and change its

Art Unit: 2828

refractive index of refraction (see col. 6 line 67 through col. 7 line 1), whereby to create the intracavity lens.

6. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (5,307,200). Yoshida discloses the claimed invention of a series of deposited material layers (21'-29') comprising the structure of the "VCSEL" and an intracavity lens (inherent, see discussion below) formed in one of the series of deposited material layers (21'-29'), and in particular the gain region (MQW structure 23', note also abstract which calls the quantum structure the active layer). Since Yoshida teaches a series of deposited material layers, which as claimed, defines a "VCSEL" structure, the device of Yoshida inherently is a "VCSEL" to the extent claimed by applicant.

Regarding the intracavity lens, see figures 8-10 and col. 10 line 10 through col. 11 line 45, which together show the series of deposited material layers (21'-29') comprising a superlattice structure (23', see col. 10 lines 48-49), with an adjacent region (27') being subjected to ion implantation (see col. 10 lines 45-48) and rapid thermal annealing (see col. 10 line 53) so as to disorder (see col. 10 lines 48-53) the superlattice structure (27') and change its refractive index of refraction (see col. 10 lines 48-53), whereby to create the intracavity lens.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (5,307,200) in view of Jewell (5,822,356). Yoshida discloses the claimed invention except for the bottom spacer between the bottom mirror (28') and the gain region (23') and a top spacer between the gain region (23') and the top mirror (29'). Jewell shows that the use of bottom and top spacers (162, 168) are well-known for separating the respective mirrors from the gain region. It would have been obvious to one of ordinary skill in the art to modify Yoshida by employing top and bottom spacers, as taught by Jewell, so as to gain the advantageous benefit of separating the respective mirrors from the gain region.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (703) 308-0545. The examiner can normally be reached on 8:30-5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the

Art Unit: 2828

organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Quyen P. Leung
Primary Examiner
Art Unit 2828

QPL
August 11, 2003